is believed, this belief having no limitation on the scope or operation of this invention, that the unexpected, superior results of the present invention are a result of a 'synergistic' effect of the block copolymer in combination with the primary surfactant. The block copolymer acts as a stabilizer of the primary surfactant at the interface. Examples of suitable block copolymers for the surfactant package include high molecular weight block copolymers, preferably ethylene oxide (EO)/propylene oxide (PO) block copolymers such as octylphenoxypolyethoxyethanol (a block copolymer produced by BASF as PLURONIC 17R2). Examples of preferred block copolymers include PLURONIC 17R2, PLURONIC 17R4, PLURONIC 25R2, PLURONIC L43, PLURONIC L31, and PLURONIC L61, all commercially available from BASF. The block copolymer is present in the invert fuel emulsion composition in the range of about 1,000 ppm to about 5,000 ppm, more preferably about 2,000 ppm to about 3,000 ppm.

C1

The surfactant package preferably includes one or more high molecular weight polymeric dispersants. The polymeric dispersant acts as a surfactant enhancer/stabilizer, stabilizing the primary surfactant and contributing to the synergistic combination of the primary surfactant and block copolymer. A preferred polymeric dispersant is HYPERMER E-464 commercially available from ICI. Other suitable polymeric dispersants include HYPERMER A-60 from ICI, a decyne diol nonfoaming wetter such as SURFINAL-104 produced by Air Products, an amineoxide such as BARLOX BX12 from Lonza, and EMULSAN, a bio-polymer surfactant from Emulsan. The polymeric dispersant is present in the invert fuel emulsion composition in the range of about 100 ppm to about 1,000 ppm, more preferably about 700 ppm to about 800 ppm.

C2

Page 9, Paragraph 27:

C3

The fuel composition may also include one or more ignition delay modifiers, preferably a cetane improver, to improve fuel detonation characteristics,

particularly where the fuel composition is used in compression ignited engines. Examples include nitrates, nitrites, and peroxides. A preferred ignition delay modifier is 2-ethylhexylnitrate (2-15 EHN), available from Ethyl Corporation under the trade designation HITEC 4103. Ammonium nitrate can also be used as a known cetane improver. Preferred compositions include about 0.1% to 0.4% by weight ignition delay modifier.

C3

Page 9 to Page 10, Paragraph 28:

The fuel composition may include one or more lubricants to improve the lubricity of the fuel composition and for continued smooth operation of the fuel delivery system. Many conventional common oil-soluble and water soluble lubricity additives may be used and can be effective in amounts below about 200 ppm. The amount of lubricant generally ranges from about 0.04% to 0.1% by weight, more preferably from 0.04% to 0.05% by weight. An example of a suitable lubricants include a combination of mono-, di-, and tri-acids of the phosphoric or carboxylic types, adducted to an organic backbone. The organic backbone preferably contains about 12 to 22 carbons. Examples include LUBRIZOL 522A and mixed esters of alkoxylated surfactants in the phosphate form, and di- and tri- acids of the Diels-Alder adducts of unsaturated fatty acids. The carboxylic types are more preferred because of their ashless character. A specific example of a suitable lubricant is DIACID 1550 (Atrachem's LATOL 1550 or Westvaco Chemicals' DIACID 1550), which is preferred due to its high functionality at low concentrations. The DIACID 1550 also has nonionic surfactant properties. Neutralization of the phosphoric and carboxylic acids, preferably with an alkanolamine, reduces possible corrosion problems caused as a result of the addition of the acid. Suitable alkanolamine neutralizers include amino methyl propanol, triethanolamine, and diethanolamine, with amino methyl propanol (available from Angus Chemical under the trade designation AMP-95) being in about 0.05 to 0.4% by weight neutralizer, more preferably about 0.06%.

C4

With fuel being the continuous phase and the use of highly purified water, there is a low potential for corrosion and erosion, however; the fuel composition may also include one or more corrosion inhibitors, preferably one that does not contribute a significant level of inorganic ash to the composition. One example is amino methyl propanol (available from Angus Chemical under the trade designation AMP-95. The addition of citric acid will also inhibit corrosion via a small change in the pH of the water; citric acid also enhances the formation of the emulsion. Aminoalkanoic acids are preferred. An example of another suitable corrosion inhibitor is available from the Keil Chemical Division of Ferro Corporation under the trade designation SYNKAD 828. Preferred compositions include about 0.01% to about 0.05% by weight corrosion inhibitor.

C5

Biocides known to those skilled in the art may also be added, provided they are ashless. Antifoam agents known to those skilled in the art may be added as well, provided they are ashless. The amount of antifoam agent preferably is not more than 0.0005% by weight.

C6

Page 11, Paragraph 31:

The invert fuel emulsion composition may also include one or more coupling agents (hydrotropes) to maintain phase stability at high temperatures and shear pressures. High temperature and shear pressure stability is required, for example, in compression ignited (diesel) engines because all the fuel delivered to the injectors may not be burned to obtain the required power load in a given cycle. Thus, some fuel may be recirculated back to the fuel tank. The relatively high temperature of the recirculated fuel, coupled with the shear pressures encountered during recirculation, tends to cause phase separation in the absence of the coupling agent. Examples of preferred coupling agents include di-and tri-acids of the Diels-Alder adducts of unsaturated fatty acids. A specific example of a suitable coupling agent is DIACID 1550, neutralized with an alkanolamine to form a water soluble salt. Suitable alkanolamine neutralizers include amino methyl propanol

C7

C7

triethanolamine, and diethanolamine, with amino methyl propanol preferred. The amount of the coupling agent typically ranges from about 0.04% to 0.1 % by weight, more preferably 0.04 to 0.05%.

C8

The invert fuel emulsion composition can include additives which perform multiple functions. For example, DIACID 1550 acts as a surfactant, lubricant, and coupling agent and citric acid has both emulsion enhancement and corrosion inhibitory properties. Similarly, AMP-95 acts as a neutralizer and helps maintain the pH of the fuel composition and ammonium nitrate, if used, acts as a cetane improver and an emulsion stabilizer.

Page 20, tables 1 and 2:

C9

	Concentration in ppm in Oil Phase				
Formulation	Amide Surfactant	Block Co-Polymer	Additional Surfactant Stabilizers		Rating
XVII	6000 Of SOA	3000 of 17R2	800 of E464	300 of EMULSAN	2
XVIII	6000 of SOA	3000 of 17R2	800 of E464	500 of BX12	2
XIX	6000 Of SOA	2000 of 17R2	600 of A-60	600 of S104	2
XX	4500 of SOA	3000 of 17R2	800 of E464		10

Rating on a scale of 1 to 10, 1 being more stabile.

Surfactants used in the above formulations:

C10

Notation	Manufacturer	Brand	Description
17R2	BASF	PLURONIC 17R2	Block co-polymer
17R4	BASF	PLURONIC 17R4	Block co-polymer
25R2	BASF	PLURONIC 25R2	Block co-polymer
L43	BASF	PLURONIC L43	Block co-polymer
L31	BASF	PLURONIC L31	Block co-polymer
L61	BASF	PLURONIC L61	Block co-polymer

SOA	Scher Chemical	SCHERCOMID SO-A fatty oliamide DBA	1:1 fatty acid Diethanolamide of
E464	ICI	HYPERMER E464	Polymeric
A-60	ICI	HYPERMER A-60	Polymeric
S-104	Air Products	SURFINAL 104	Decyne diol unique
BX12	Lonza	BARLOX	Amine oxide
Emulsan	Emulsan		Bio-polymer
T12	Okzo	ETHAMINE T12	Amine othoxilate
DM 430		IGEPAL	Dinonylphenol Ethoxylate
DS/280.			

C10

Page 24, Paragraph 62:

C10

A preferred fuel composition has the following composition: diesel, purified water, methanol, 2-ethylhexylnitraite, SO-A, 17R2 and E-464.

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In the Claims:

Please cancel Claims 1-22.

Please add new Claims 23-78:

C10

23. (New) A method for producing a high stability, low emission, invert fuel emulsion composition, comprising:

blending a flow of additives including a surfactant package with a flow of a hydrocarbon petroleum distillate fuel in a first in-line blending station to create a first composition; wherein said surfactant package includes a primary surfactant, a block copolymer, and a polymeric dispersant, and said hydrocarbon petroleum distillate fuel is a continuous phase of the emulsion;